

Earth's Hydrosphere

ES-5 The student will demonstrate an understanding of Earth's freshwater and ocean systems.

ES-5.6 Summarize the advantages and disadvantages of devices used to control and prevent coastal erosion and flooding.

Taxonomy level: 2.4-B Understand Conceptual Knowledge

Previous/future knowledge: Students have not been introduced to the concepts in this indicator in any previous grade.

It is essential for students to know that in coastal areas structures such as seawalls, groins, jetties, and breakwaters are built in an attempt to prevent beach erosion and destruction of oceanfront properties.

- Students need to study each of these structures to determine the advantage each gives to control and prevent coastal erosion and flooding.
- Where structures are not built, beach nourishment, which involves adding large quantities of sand to the beach system, is sometimes used.
- Along with advantages, students need to study the disadvantages of these structures as they are built along the coastlines, as well as problems with beach nourishment.

An overall understanding that students need to have in regards to this concept is that the shoreline is not stable; shorelines continually undergo change. Erosion and deposition are natural processes of the interaction of ocean water with coastal features.

It is not essential for students to evaluate or judge the value of devices built along the coastal areas.

Assessment Guidelines:

The objective of this indicator is to *summarize* advantages and disadvantages of devices built along coastal areas; therefore, the primary focus of assessment should be to generalize major points about why these devices are needed to control and prevent erosion and flooding and why they are drawbacks to the natural change of the coastline.

In addition to summarize appropriate assessments may require students to:

- *explain* the effect a structure would have if built along the coastline;
- *identify* the reason for structures to be built along the coastline; or
- *exemplify* structures built along coastal areas.